WHAT IS CLAIMED IS:

1. A method for detecting unanticipated changes in a multidimensional data set comprising the steps of:

(a). selecting a subset of the multidimensional data set, each data set of said subset being correlated with the remaining data sets thereof by at least a predetermined criterion;

(b). partitioning each data set of said subset into a plurality of locations, each of said plurality of locations sized in accordance with a size parameter of known features of the multidimensional data sets;

(c). assigning a vector to each of said plurality of locations in each data set of said subset, said vector including a plurality of scalar components;

(d). estimating from at least one of said data sets of said subset at least one expected vector for each of said plurality of locations;

(e). calculating a vector of expected ranges for each of said plurality of locations from said at least one expected vector; and,

(f). comparing a vector assigned to each of said plurality of locations of at least one of said data sets of said subset to said vector of expected ranges corresponding to said each of said plurality of locations and identifying a location as including an unanticipated change when a predetermined number of said scalar components of said vector assigned to each of said plurality of

locations exceeds said expected range in said corresponding vector of expected ranges.

2. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1 further including the step of providing a plurality of artificial neural networks, each of said plurality of artificial neural networks providing one of said at least one expected vector at an output thereof responsive to a vector assigned to one of said plurality of locations applied to an input thereof.

3. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 2, further including the step of training said plurality of artificial neural networks on said subset of the multidimensional data set.

4. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 3, wherein said training of said artificial neural networks includes the steps of:

(1). dividing said subset into a training subset and an evaluation hold out subset;

(2). initializing each node of said artificial neural network with a random value;

(3). training each of said plurality of artificial neural networks on said vector assigned to each of said plurality of locations of said training set according to a predetermined training method;

(4). applying said vector assigned to each of said plurality of locations of said evaluation hold out subset to said input of each of said plurality of artificial neural networks;

(5). computing an error function on a difference between each of said vectors assigned to each of said plurality of locations of said evaluation hold out subset and said corresponding estimated vector; and

(6). repeating said steps (2) – (6) until said error function is minimized.

5. The method for detecting unanticipated changes in a multidimensional set as recited in Claim 4, where said error function is a root mean squared error function.

6. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 2, wherein said estimating step (d) includes the steps of:

(1). dividing said subset into a first subset and a second subset;

(2). applying said vector assigned to each of said plurality of locations of said first subset to said input of each of said plurality of artificial neural networks for providing thereby a corresponding one of said at least one expected vector at said output thereof.

7. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 6, wherein said calculating step (e) includes the step of calculating said vector of expected ranges from said plurality of scalar components of said at least one expected vector output from each of said plurality of artificial neural networks.

8. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 7, further including the step of applying said vector assigned to each of said plurality of locations of said second subset to said input of each of said plurality of artificial neural networks for providing thereby one of said at least one expected vector at an output thereof.

9. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 8, wherein said calculating step (e) includes the step of calculating said vector of expected ranges from said plurality of scalar components of said at least one expected vector corresponding to said first subset applied to said input of said plurality of artificial neural networks and from said plurality of scalar components of said at least one expected vector corresponding to said second subset applied to said input of said plurality of artificial neural networks.

10. The method for detecting unanticipated changes in a multidimensional data sets as recited in Claim 1, wherein one of said at least one predetermined criterion with which each data set of said subset is correlated is time.

11. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1, wherein each of said plurality of scalar components is a measurement of a physical quantity corresponding to each of said plurality of locations.

12. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 11, wherein said measurement of said physical quantity for each of said plurality of scalar components in each vector assigned to each of said plurality of locations is independent of said measurement of said physical quantity for remaining ones of said plurality of scalar components in said vector.

13. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1, wherein said partitioning step (b) includes the step of sizing each of said plurality of locations to be one-half to one-third said size parameter of said known features.

14. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1 further including the step of orthorectifying each data set of said subset so that features of each data set are sized in accordance with said size parameter.

15. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1, wherein each data set of said subset includes at least one image of pixels, said pixels representing said scalar components and grouped to form said locations.

16. The method for detecting unanticipated changes in a multidimensional data set as recited in Claim 1, including the step of excluding a location from being identified as including the unanticipated change if less than a predetermined number of locations adjacent thereto are identified as including the unanticipated change.

17. A method for detecting unanticipated changes in a set of images, each of the set of images including a plurality of pixels, the method comprising the steps of:

(a). correlating the set of images by at least one predetermined criterion;

(b). grouping a predetermined number of adjacent ones of the plurality of pixels into a plurality of locations;

(c). assigning a vector to each of said locations, each vector including a plurality of scalar components;

(d). providing at least one artificial neural network for predicting, in accordance with said correlation by said at least one predetermined criterion, a vector for each of said plurality of locations from a vector of a corresponding location in a subset of the set of images;

(e). training said at least one artificial neural network on the set of images;

(f). predicting a first expected vector by each of said at least one artificial neural network for each of said plurality of locations from a first subset of the set of images;

(g). predicting a second expected vector by each of said at least one artificial neural network for each of said plurality of locations from a second subset of the set of images;

(h). computing, from said first expected vector from said each of said at least one artificial neural network and said second expected vector from said each of said at least one artificial neural network, a vector of expected ranges for each of said plurality of locations;

(i). computing a weighted vector of scalar components from said first expected vector from each of said at least one artificial neural network for each of said plurality of locations; and

(j). comparing said weighted vector to said vector corresponding to said location in said second subset of the images and identifying differences therebetween as unanticipated changes when said differences exceed said expected range in said corresponding vector of expected ranges.

18. The method for detecting unanticipated changes in a set of images as recited in Claim 17, wherein said training of said artificial neural networks includes the steps of:

(1). dividing the set of images into a training subset and an evaluation hold out subset;

(2). initializing each node of said artificial neural networks with a random value;

(3). training each of said artificial neural networks on said vector assigned to each of said plurality of locations of said training subset according to a predetermined training method;

(4). applying said vector assigned to each of said plurality of locations of said evaluation hold out subset to said input of each of said plurality of artificial neural networks;

(5). computing a root mean squared error function on a difference between each of said vectors assigned to each of said plurality of locations of said evaluation hold out subset and said corresponding estimated vector;

(6). repeating said steps (2) – (5) until said root mean squared error function is minimized; and

(7). training each of said plurality of artificial neural networks on said vector assigned to each of said plurality of locations of said set of images according to said predetermined training method.

19. The method for detecting unanticipated changes in a set of images as recited in Claim 17, wherein said at least one predetermined criterion with which set of images is correlated is time.

20. The method for detecting unanticipated changes in a set of images as recited in Claim 17, wherein each of said plurality of scalar components is a measurement of a physical quantity corresponding to each of said plurality of locations.

21. The method for detecting unanticipated changes in a set of images as recited in Claim 17, wherein said grouping step (b) includes the step of sizing each of said plurality of locations to be one-half to one-third said size parameter of said anticipated features.

22. The method for detecting unanticipated changes in a set of images as recited in Claim 17 further including the step of orthorectifying each subset so that features of each data set are sized in accordance with said size parameter.